ALADYSHKIN, A.S.; KAZARINOV, V.P.; MIKUTSKIY, S.P.

Third Interdepartmental Coordination Conference on Compiling Lithopaleogeographic Maps of Siberia. Geol. i geofiz. no.12:118-120 '62. (MIRA 16:3)

(Siberia—Paleogeography—Maps)

BGATOV, V.I.; AKUL'SHINA, Ye.P.; BUDNIKOV, V.I.; GERASIMOV, Ye.K.; GUROVA, T.I.; KAZANSKIY, Yu.P.; KAZARINOV, V.P.; KONTOROVICH, A.E.; KOSOLOBOV, N.I.; LIZALEK, N.A.; MATUKHIN, R.G.; MATUKHINA, V.G.; PETRAKOV, V.U.; RODIN, R.S.; SAVITSKIY, V.Ye.; SHISHKIN, B.B.; GRIN, Ye.P., tekhn. red.

[Lithoformational analysis of sedimentary rocks] Litologo-formatsionnyi analiz osadochnykh tolshch. Pod red. V.I. Bgatova i V.P.Kazarinova). (MIRA 16:7)

1. Sibirskiy nauchno-issledovatel'skiy institutu geologii, geofiziki i mineral'nogo syr'ya.
(Rocks, Sedimentary--Analysis)

GURARI, F.G.; KAZARINOV, V.P.; MIRONOV, Yu.K.; NALIVKIN, V.D.; NESTEROV, I.I.; OSYKO, T.I.; ROVNIN, L.I.; ROSTOVTSEV, N.N.; RUDKEVICH, M.Ya.; SIMONENKO, T.N.; SOKOLOV, V.N.; TROFIMUK, A.A.; CHOCHIA, N.G.; ERV'YE, Yu.G.; OMBYSH-KUZNETSOV, S.O., red.; LOKSHINA, O.A., tekhn.red.

[Geology and oil and gas potentials of the West Siberian Plain, a new tank farm of the U.S.S.R.] Geologiia i neftegazonosnost' Zapadno-Sibirskoi nizmennosti-novoi neftianoi bazy SSSR. Novosibirsk, Izd-vo Sibirskogo otd-niia, 1963. 199 p. (MIRA 17:1)

KAZANSKIY, Yuriy Petrovich; KAZARINOV, V.P., doktor geol.-mineral. nauk, red.; ALEKSANDROVSKIY, B.M., red.; YELISTRATOVA, Ye.M., tekhn. red.

[Cretaceous and Paleogene sedimentary formations in the middle Ob' Valley (West Siberian Plain).] Melovye i paleogenovye osadochnye formatsii Srednego Priob'ia. (Zapadno-Sibirskaia nizmennost'. Novosibirsk, Izd-vo SO AN SSSR, 1963. 352 p. (Akademiia nauk SSSR. Sibirskoe otdelenie. Institut geologii i geofiziki. Trudy, no. 18)

(MIRA 17:1)

LEBEDEV, I.V., otv.red.vypuska; KAS'YANOV, M.V., glavnyy red.; GURARI, F.G., zamestitel' glavnogo red.; AMSHINSKIY, N.N., red.; ARUSTAMOV, A.A., red.; DERBIKOV, I.V., red.; KAZARINOV, V.P., red.; KALUGIN, A.S., red.; MALIKOV, B.N., red.; MIKUTSKIY, S.P., red.; ROSTOVTSEV, N.N., red.; SUKHOV, S.V., red.; TESLENKO, Yu.V., red.; UMANTSEV, D.F., red.; SAFRONOVA, I.M., tekhn.red.; RAGINA, G.M., vedushchiy red.

[Biostratigraphy of Mesozoic and Tertiary sedimentsin Western Siberia] Biostratigrafiia mezozoiskikh i tretichnykh otlozhenii Zapadnoi Sibiri. Moskva, Gostoptekhizdat. Vol. 1. 1962. 590 p. Vol. 2. [Atlas of paleontological plates and their explanations] Atlas paleontologicheskikh tablits i ob"iasneniia k nim. 1962. 128 plates. (Its Trudy, no.22). (MIRA 17:4)

KAZARINOV, V.P., otv.red.vypuska; ROSTOVTSEV, N.N., glavnyy red.; SEGAL', Z.G., vedushchiy red.; GURARI, F.G., zamestitel' glavnogo red.; AMSHINSKIY, N.N., red.; DERBIKOV, I.V., red.; KALUGIN, A.S., red.; MALIKOV, B.N., red.; MIKUTSKIY, S.P., red.; SUKHOV, S.V., red.; TESLENKO, Yu.V., red.; UMANTSEV, D.F., red.; GAVRILOVA, N.V., red.; SAFRONOVA, I.M., tekhn. red.

[Geology and prospects for finding oil and gas in the northwestern part of the Siberian Platform.] Geologicheskoe stroenie i perspektivy neftegazonosnosti severo-zapada Sibirskoi platformy. Leningrad, Gostoptekhizdat, 1963. 183 p. [Trudy Sibirskogo nauchno-issledovatel'skogo instituta geologii, geofiziki i mineral'nogo syr'ya, no.28.] (MIRA 16:11)

KAZARINOV, V.P., otv. red.; BGATOV, V.I., red.; KAZANSKIY, Yu.P., red.; KRASHENINNIKOV, G.F., red.; SAKS, V.N., red.; YABLOKOV, V.S., red.; SHPAKOVSKAYA, L.I., red.

[Methods for compiling lithological facies and paleogeographic maps; transactions] Metody sostavleniia litologofatsial'nykh i paleogeograficheskikh kart; trudy. Novosibirsk, Izd-vo Sibirskogo otd-niia AN SSSR. Vol.1. 1963. 174 p. (MIRA 18:1)

1. Vsesoyuznoye litologicheskoye soveshchaniye. 5th. Novosibirsk, 1961.

KAZARINOV, V.P.

Mesozoic and Paleogene sedimentary series and tectonic bases of Siberia. Trudy Inst.geol.i geofiz.Sib.otd.AN SSSR no.[illegible] '63. (MIRA [illegible])

SIDORENKO, A.V., glav. red.; ROSTOVTSEV, N.N., red.; KAZARINOV, V.P., red.; OSYKO, T.I., red.; RUDKEVICH, M.Ya., red.

[Geology of the U.S.S.R.] Geologiia SSSR. Glav. red. A.V.Sidorenko. Moskva, Nedra. Vol.44. Pt.1. 1964. 550 p. (MIRA 18:5)

KAZARINOV, V.P., otv. red.; BGATOV, V.I., red.; KAZANSKIY, Yu.P., red.; KRASHENINNIKOV, G.F., red.; SAKS, V.N., red.; YABLOKOV, V.S., red.; SHPAKOVSKAYA, L.I., red.

[Sedimentary formations of Siberia; transactions] Osadochnye formatsii Sibiri; trudy. Novosibirsk, Red.-izd. otdel Sibirskogo otd-niia AN SSSR. Vol.2. 1964. 162 p. (MIRA 18:6)

1. Vsesoyuznoye litologicheskoye soveshchaniye. 5th, Novosibirsk.

KAZ-NIIVV, V.P.

[illegible] (MLRA 10:6)
352 '64.

KAZARINOV, V.P.

Theory and practice of the lithoformational method. Sov. geol. 8 no.8:54-68 Ag '65. (MIRA 18:10)

1. Sibirskiy nauchno-issledovatel'skiy institut geologii, geofiziki i mineral'nogo syr'ya, Novosibirsk.

TUYEZOVA, Nina Aleksandrovna; Prinimali u[illegible]astiye: DEMINA, R G.; BRYUZGINA, N.I.; ROSTOVTSEV, N.N., glavnyy red.; GURARI, F.G., zamestitel' glavnogo red.; UMANTSEV, D.F., red.; DERBIKOV, I.F., red.; KAZARINOV, V.P., red.; KALUGIN, A.S., red.; KOLOBKOV, M.N., red.; MALIKOV, B.N., red.; MIKUTSKIY, S.P., red.; BOTVINNIKOV, V.I., red.; BUDNIKOV, V.I., red.; BOGOMYAKOV, G.P., red.; SUKKOV, V.S., red.; SUKHOV, S.V., red.; BOCHAROVA, N.I., red.

[Physical properties of rocks in the West Siberian Plain.] Fizicheskie svoistva gornykh porod Zapadno-Sibirskoi nizmennosti. Moskva, Nedra, 1964. 127 p. (Sibirskii nauchno-issledovatel'skii institut geologii, geofiziki i mineral'nogo syr'ya. Trudy, no.31). (MIRA 18:7)

BGATOV, V.I.; KAZARINOV, V.P.

Sedimentation series as basic stages in the cyclic development of sedimentation. Sov.geol. 8 no.10:80-93 O '65.
(MIRA 18:12)

1. Sibirskoye otdeleniye Nauchno-issledovatel'skogo instituta geologii, geofiziki i mineral'nogo syr'ya.

KAZARINOV, V.Ye.

AUTHOR BALASHOVA, N.A., IVANOV, V.A. and KAZARINOV, V.Ye. 20-2-3/62

TITLE Dependence of Adsorption of Cations on Platinum Electrode Potential.
(Zavisimost' adsorbtsii kationov ot potentsiala platinovogo elektroda. - Russian)

PERIODICAL Doklady Akademii Nauk SSSR 1957, Vol 115, Nr 2, pp 336-338 (U.S.S.R.)

ABSTRACT For the majority of metals a study of the adsorption of cations on their surface is complicated by the phenomen of exchange between the cations of the metal and the own or foreign solution cations. Such an exchange was not noticed in the case of platinum. This renders the comparison of its electrochemical and adsorptive properties easy. No special studies of this problem are known. Some results by Erbacher and Lorenz do not permit any conclusions on the connection between the adsorption phenomena and the structure of a double electric layer on the surface of the metal. From a number of works with a mercury electrode it could be seen that the anordganic cations (with the exception of thallium ion) do not possess a specific adsorbability. For one-charge cations it was found that they even show a certain nega-

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Dependence of Adsorption of Cations on Platinum Electrode Potential.

tive adsorption on the mercury of concentrated solutions. According to measurements of capacity the effect of a hyperequivalent adsorption as against a weakly negative charge was only proved for multi-charge cations of lanthanum and thorium. This was explained by the formation of anion-cation pairs which were adsorbed on the mercury surface in a manner that the anion was inclined to the solution. For a study of the structure of this double electric layer it was interesting to determine the dependence of cation adsorption on platinum electrode potential. This was done in the present paper by the method of labeled atoms. Ill.1 shows a typical curve of dependence of the adsorption of cesium cations of a sulfuric acid solution on the potential of platinum. All potentials are relative to a normal hydrogen electrode. The results show that the mentioned dependence seems to be more complex than described in publications. A maximum value of cation absorption occurs in the region of highest negative charge. It apparently somewhat surpasses the value which would be necessary for the formation of a double layer

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20-2-39/52

Dependence of Adsorption of Cations on Platinum Electrode Potential.

positive than 0,45 v. are most probably connected with the development of adsorbed oxygen on the surface. The anion adsorption must therefore lead to decrease in cation adsorption, as long as the surface charge remains positive. This explains the decrease of cation adsorption in the 0,45-0,55 region. In the case of greater quantities of adsorbed oxygen the potential shifts to the negative and the electrostatic adsorption of cations increases. After 0,7 v. is reached, the increase in quantity of the adsorbed oxygen is no longer capable of compensating the influence of the increasing positive change in potential. Now the cation adsorption again decreases. Surface oxides may perhaps be concluded from the observed minima and maxima.
(2 Illustrations, 9 Slavic references)

ASSOCIATION: not given.
PRESENTED BY: FRUMKIN A.N., Academician, March 8, 1957
SUBMITTED: 8.3.57
AVAILABLE: Library of Congress.

CARD 4/4

KAZARINOV, V.Ye.; BALASHOVA, N.A.

Tracer study of iodine adsorption and desorption on smooth platinum. Dokl.AN SSSR 134 no.4:864-867 O '60. (MIRA 13:9)

1. Institut elektrokhimii Akademii nauk SSSR. Predstavleno akad. A.N.Frumkinym.
(Iodine--Isotopes) (Platinum--Isotopes) (Sorption)

KAZARINOV, V.Ye.; BALASHOVA, N.A.

Interaction of oxygen with the anions adsorbed on platinum from solution. Dokl. AN SSSR 139 no.3:641-644 Jl '61. (MIRA 14-7)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.

(Oxygen) (Anions) (Adsorption)

YAO LU-AN' [Yao Lu-an]; KAZARINOV, V.Ye.; VASIL'YEV, Yu.B.; BAGOTSKIY, V.S.

Effect of adsorption on the rate of processes taking place on a platinum electrode in the system quinone - hydroquinone. Dokl. AN SSSR 151 no.1:151-154 Jl '63. (MIRA 16:9)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N.Frumkinym.

(Quinone) (Hydroquinone) (Adsorption)

POVAROV, Yu.M.; KAZARINOV, V.Ye.; KESSLER, Yu.M.; GORBANEV, A.I.

Solubility of AgCl in solutions of NaCl and CsCl in N-methylformamide and in formamide. Zhur.neorg.khim. 9 no.4: 1008-1010 Ap '64. (MIRA 17:4)

1. Institut elektrokhimii AN SSSR.

KAZARINOV, V.Ye., kand.khim.nauk; CHERNOVA, G.P., kand.khim.nauk

Symposium on Electrochemical Corrosion and Passivity. Vest. AN SSSR 34 no. 2:102 F '64. (MIRA 17:5)

KAZARINOV, V.Ye.; BALASHOVA, N.A.

Adsorption of ions as dependent on platinum potential. Dokl. AN SSSR 157 no.5:1174-1177 Ag '64. (MIRA 17:9)

1. Institut elektrokhimii AN SSSR. Predstavleno akademikom A.N. Frumkinym.

YAO LU-AN' (Yao Lu-an'); KAFARINOV, V.V.; VASIL'YEV, Yu.B.; PAGOTSKIY, V.S.

Kinetics of electrochemical processes in the system quinone - hydroquinone. Part 2: Effect of the adsorption of particles nonparticipating in the reaction. Elektrokhimiia 1 no.2:216-[illegible] 1965. (MIRA 18:5)

1. Institut elektrokhimii AN SSSR.

GIRINA, G.P.; FIOSHIN, M.Ya.; KAZARINOV, V.Ye.

State of the surface of a platinum anode at potentials preceding the course of Kolbe electrosynthesis. Elektrokhimiia 1 no.4: 478-482 Ap '65. (MIRA 18:6)

1. Institut elektrokhimii AN SSSR.

BALASHOVA, N.A.; KAZARINOV, V.Ye.

Relation between the adsorption of cations and anions on platinum from acid solutions at different potentials. Elektrokhimiia 1 no.5:512-516 My '65. (MIRA 18:6)

1. Institut elektrokhimii AN SSSR.

KAZARINOV, V.Ye.; BALASHOVA, N.A.; KULEZNEVA, M.I.

Structure of the surface layer on platinum in alkaline solutions.
Elektrokhimiia 1 no.8:975-978 Ag '65. (MIRA 18:9)

1. Institut elektrokhimii AN SSSR.

L 12895-66 EWT(m)/EWP(j)/EWP(t)/EWP(b) IJP(c) JD/JG/RM

ACC NR: AP5027583 SOURCE CODE: UR/0364/65/001/011/1389/1391

AUTHOR: Petriy, O. A.; Kazarinov, V. Ye.

ORG: Moscow State University im. M. V. Lomonosov (Moskovskiy gosudarstvennyy universitet); Institute of Electrochemistry Academy of Sciences SSSR (Institut elektrokhimii Akademii nauk SSSR)

TITLE: Study of mixed electrolytic deposits of platinum and palladium with ruthenium

SOURCE: Elektrokhimiya, v. 1, no. 11, 1965, 1389-1391

TOPIC TAGS: platinum, palladium, ruthenium, electrodeposition

ABSTRACT: Because of the difficulty of quantitative analysis of Pt and Pd alloys with Ru the alloys were deposited on a platinum substratum from mixed solutions 1% [$xH_2PtCl_6 + yK_2RuNOCl_5$] or 1% [$xPdCl_2 + yK_2RuNOCl_5$]. The current density was maintained at 2 ma/cm^2 for Pt-Ru deposits and 6 ma/cm^2 for Pd-Ru deposits. Electrolysis time was 3 hrs and 40 min, respectively. It was found that the weight of the deposit is directly proportional to electrolysis time and the composition of the deposit does not change. The total amount of the deposit was determined

UDC: 541.13

Card 1/2

BALASHOVA, N.A.; KAZARINOV, V.Ya.

Electrochemical method of preparation of radioactive solutions of carrier-free iodate. Radiokhimiia 7 no.6:739-741 '65.
(MIRA 19:1)

BAL[illegible], N.S.; KAZARINOV, V.Ye.

Structure of the double electric layer on platinum studied by the radioactive-tracer technique. Usp.khim. 34 no.10:1721-1730 O '65. (MIRA 18:11)

1. Institut elektrokhimii AN SSSR.

CZECHOSLOVAKIA

FRUMKIN, A.N.; MANSUROV, G. N.; KAZARINOV, V.E.; BALASHOVA, N. A.

Electrochemical Institute, Soviet Academy of Sciences (Institut elektrokhimii, Akademiia nauk SSSR), Moscow (for all)

Prague, Collection of Czechoslovak Chemical Communications, No 2, Feb 1966, pp 806-813

"Study of the adsorption of cadmium cations on a platinum electrode."

KAZARINOV, Ye.V.

Device for expansion jointing of rail lengths. Put' i put. khoz. no.5:12 My '58. (MIRA 13:3)

1.Glavnyy mekhanik putevoy mashinnoy stantsii-7, stantsiya Gusarovka.
(Railroads--Tools and implements)

L 16113-66 EEC(k)-2/EWP(k)/EWT(d)/EWP(h)/EWP(l)/EWP(v) BC

ACC NR: AP5025115 SOURCE CODE: UR/0208/65/005/005/0894/0902

AUTHOR: Baranov, A. Yu. (Leningrad); Kazarinov, Yu. F. (Leningrad); Khomenyuk, V. V. (Leningrad)

ORG: none

60
59
B

TITLE: Gradient methods for solving problems of terminal guidance in linear systems of automatic control

SOURCE: Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki, v. 5, no, 5. 1965, 894-902

TOPIC TAGS: linear automatic control system, terminal guidance, vector function, ordinary differential equation, function theory

ABSTRACT: The authors consider the problem of minimizing the strongly convex functional of the terminal stage of an object whose motion is described by a linear system of ordinary differential equations

$$\frac{dX(t)}{dt} = A(t)X(t) + \sum_{j=1}^{r} B_j(t)u_j(t) + f(t),$$

with initial conditions $X(0) = X^0$, where X, B_j $(j = 1,\ldots,r)$, f are n-dimensional vectors with respective coordinates $x_1,\ldots, x_n$; $b_{1j},\ldots,b_{nj}$; $f_1,\ldots,f_n$, and

Card 1/2 UDC: 518:51:62-50

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ACC NR: AP5025115

$A = (a_{ik})$ is an n by n matrix. It is assumed that $b_{ij}(t)$, $f_i(t)$ and $a_{ik}(t)$ are real-valued and continuous for $t \in (0,T)$ where $T > 0$ is the given period of guidance. The authors determine the r-dimensional vector-function $u(t) = (u_1(t),\ldots,u_r(t))$ satisfying the condition $|u_j(t)| \leq 1$, $(j = 1,\ldots,r)$, $t \in [0,T]$ which minimizes the functional $g(X(T,u))$. In the latter $g(X)$ is a real-valued, twice continuously differentiable and strongly convex function such as

$$\sum_{i,k=1}^{n} \frac{\partial^2 g(X)}{\partial x_i \partial x_k} z_i z_k \geqslant m \sum_{i=1}^{n} z_i^2,$$

where $m > 0$ is a constant and $X(t,u)$ is the solution of the system under consideration corresponding to the solution u. The use of the gradient method for the solution of the problem is also studied. The authors thank V. I. Zubov for advice. Orig. art. has: 1 figure and 37 formulas.

SUB CODE: 12,13/ SUBM DATE: 15Oct64/ ORIG REF: 004

Card 2/2

KAZARINOV, Yu. M

KAZARINOV, Yu. M.
and others

"Transmission of a Pulse and Noise Through a Linear Electron Detector," pp 187-197, ill, 3 ref

Abst: An analysis is given of the specific characteristics of a process for the transmission of a pulse signal and noise through a detector for the more representative case of action of a sinusoidal distrubance. It is shown that an examination of the given particular case not only permits one to determine the nature of the action of the noise on signal pulses, but also provides a method of computing the suppression of a pulse signal by other types of noises.

SOURCE: Izvestiya Leningr. Elektrotekhn. In-ta im. V. I. Ul'yanova (Lenina) (News of the Leningrad Electrical Engineering Institute imeni V. I. Ul'yanov /Lenin/), No 30, Leningrad, 1956

Sum 1854

KAZARINOVA, Yu. M.

PHASE I BOOK EXPLOITATION 1184

Bukler, Veniamin Osherovich, Valyayev, Ivan Nikitich (Deceased), Kazarinov, Yuriy Mikhaylovich, Rabinovich, Yuriy Izrailevich, Angelevich, Naum El'khonovich

Regulirovka radioapparatury (Adjustment of Radio Communications Equipment) Moscow, Gosenergoizdat, 1957. 375 p. 20,000 copies printed.

Ed.: Zhukov, V.A.; Tech. Eds.: Soboleva, Ye.M. and Zabrodina, A.A.

PURPOSE: The book is a textbook for students of technical and vocational schools. It may also be used by the radio industry for on-the-job training of workers as factory technicians engaged in adjusting and tuning radio equipment.

COVERAGE: The authors provide basic information on the adjustment and tuning of radio communications equipment. They describe methods of adjusting and tuning power supply circuits, superheterodyne receivers, television sets, transmitters, radar equipment, and other devices. They also describe the testing of radio communications equipment. According to the authors the book represents the first systematic account of techniques employed in adjusting and tuning various types of equipment under laboratory conditions and during lot- and mass production. It is stated that the book is based on the program for the radio-technician's course adopted in schools of the State labor force. It is assumed that the reader is acquainted with the fundamentals of electricity and radio. Chapters 1,3,8,10 and Section 4 of Chapter 4 were written by B.O. Bukler; Chapter 6 and Sections 1,2 and 5 of Chapter 4 were written by I.N. Balyayev; Chapter 9 by Yu.M. Kazarinov; Chapter 2 by Yu.I. Rabinovich; Chapters 5 and 7 by N.E. Angelevich; and Section 3 of Chapter 4 by I.N. Valyayev and Yu.I. Rabinovich. The authors thank V.A. Volgov for reviewing the manuscript and V.A. Zhukov for editing the text. There are 38 references, all Soviet.

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Adjustment of Radio Communications (Cont.) 1184

TABLE OF CONTENTS:

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Adjustment of Radio Communications (Cont.)

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AVAILABLE: Library of Congress (TK7870.R38)

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JP/fal
2-17-59

KAZARINOV, Yu.M.; KOLOMENSKIY, Yu.A., assistent; SMIRNOV, R.I., nauchnyy sotrudnik

Effect of fluctuation noises on the precision of auto-tracking systems having astaticism of first order and a pass band controlled by input signals. Izv. vys. ucheb.zav.; prib. no.2:3-12 '58. (MIRA 11:7)

1.Leningradskiy elektrotekhnicheskiy institut im. V.I. Ul'yanova (Lenina).

(Remote control--Noise)

82853

S/112/60/000/008/002/012

24.6810

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1960, No. 8, p. 249, # 4.7039

AUTHORS: Vyazemskiy, V.O., Kazarinov, Yu.M.*, Trifonov, V.V.

TITLE: Amplitude Analyzer of Nuclear Radiation Spectra

PERIODICAL: Izv. Leningr. elektrotekhn. in-ta, 1959, No. 38, pp. 237-248

TEXT: The authors investigate the limitations and advantages of using various memory devices in amplitude analyzers. A description is given of the "AMA-3c" (AMA-3s) type automated multi-channel amplitude analyzer with an electrostatic storage tube as memory device. This model was exhibited at the Geneva Exhibition in 1958. It possesses the following technical data: number of channels - 128; capacity of each channel - 2^{16}, resolving time 0.5 + 22 μsec (n = channel number). The results are read on the monitor screen in the form of binary numbers or as histogram. The analyzer can operate with external control pulses (under coincidence or anticoincidence conditions). The number of tubes is 130, power consumption is 850 w.

A.A.N.

Translator's note: This is the full translation of the original Russian abstract.

Card 1/1

* Docent, Candidate of Technical Sciences

9(2) SOV/142-2-1-17/22

AUTHORS: Kazarinov, Yu.M., Kolomenskiy, Yu.A., and Petrov, Yu.V.

TITLE: A Square-Law Detector Circuit With a Wide Range of Working Amplitudes (Ob odnoy skheme kvadratichnogo detektora s shirokim diapazonom rabochikh amplitud)

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy - radiotekhnika, 1959, Vol 2, Nr 1, pp 112-114 (USSR)

ABSTRACT: Networks with a square amplitude characteristic are used in different engineering fields. In many cases the square characteristic must be maintained over a wide range of input voltages. This is important, for example, for preventing the suppression of the signal by noise. The principal obstacle in designing square-law detectors is caused by the fact that there are no diodes with a square characteristic in a wide range of working amplitudes. When checking silicon diodes DK-S and DK-V, it was found that their amplitude characteristics have square sections, not exceeding 0.1 volt. In connec-

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A Square-Law Detector Circuit With a Wide Range of Working Amplitudes

tion with this investigation, a square-law detector was developed with a multi-electrode tube, based on the principle of voltage multiplication. Figure 1 shows the circuit diagram of this detector with a 6A7 or 6A2P tube. The circuit diagram also shows the last stage of an IF amplifier with one 6Zh4 tube, from which the signal and noise voltage is fed to the 1st and 3rd grids of the detector tube. The authors present the experimental investigation results of this square-law detector in two graphs. They show that the suggested detector circuit has an extended square characteristic and may be used for detecting signals with amplitudes changing in wide ranges. There are 1 circuit diagram, 2 graphs and 1 Soviet reference.

KAZARINOV, Yu. M.; KOLOMENSKIY, Yu.A.

Analyzing noise stability of certain types of time discriminators.
Izv. vys. ucheb. zav.; radiotekh. 2 no.2:205-216 Mr-Ap '59.
(MIRA 12:7)

1. Rekomendovana kafedroy radiopriborov Leningradskogo elektrotekhnicheskogo institut im. V.I. Ul'yanova (Lenina).
(Radio--Noise)

81113

S/142/60/000/01/005/022
E140/E463

9,3230

AUTHORS: Kazarinov, Yu.M., Tolokonnikov, S.V. and Medyntsev, L.N.

TITLE: Calculation of Optimal Parameters of a Synchronized Filter

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Radiotekhnika, 1960, Nr 1, pp 49-59 (USSR)

ABSTRACT: A synchronous filter[25] has a frequency characteristic approximating the complex-conjugate spectrum of the periodic signal at the input. The most widespread filter of this type is a delay line with positive feedback. Two possible methods of solving this problem exist: comparison of frequency spectra and selection of optimal transient characteristic of the filter for given input waveform. The latter is considered more convenient by the author. Four cases are considered; pulse sequence with rectangular envelope; pulse sequence with envelope of the type cos φ; pulse sequence with envelope in the form of $\cos^2 \varphi$; pulse sequence with triangular envelope. The method enables the following parameters to be calculated: gain in signal/noise ratio; waveform and amplitude of output signal envelope; magnitude of time delay of envelope maximum with respect to the filter

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AUTHORS: Kazarinov, Yu. and Kolomenskiy, Yu. A.

TITLE: Accuracy of the Automatic Determination of the Coordinates by an All-round Scanning System

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Radiotekhnika, 1960, Vol. 3, No. 2, pp 168 - 176

TEXT: The error in determining the coordinates by means of all-round scanning radar[24] is a funcation of the parameters of the system and the behaviour of the target. An attempt is made to determine these errors. For the purpose of analysis it is assumed that: 1) the signal-to-noise ratio at the input of the detector is constant for each group of signals; 2) the tracking is carried out in the horizontal plane; 3) the duration of the distance and azimuth selector pulses is such that the system will not lose its target at a given noise level. 4) the gain of the antenna is constant in bearing; 5) the time interval between individual groups of the reflected signals and the number of pulses in a group are independent of the behaviour of the target; 6) a linear detector is employed and 7) the threshold and the

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Accuracy of the Automatic Determination of the Coordinates by an All-round Scanning System

signal-to-noise ratio are such that the probability of the appearance of a spurious signal during one repetition period is negligible as compared with the probability of detection. The following probability functions are considered: p - the probability of the signal exceeding a threshold z, where $z = U_z/\sigma$ (ratio of the threshold voltage to the RMS value of noise); P - the probability of the signal exceeding the threshold during one revolution of the antenna; P_Σ is the probability of the signal exceeding the threshold (in the presence of noise) when the signal is obtained as a result of n-ple interperiodic summation, P_i - the probability of the signal exceeding the threshold during the i-th revolution of the antenna; the tracking error $\bar{\varepsilon}$. The functions P and P_Σ are plotted in Figs. 2 and 4 for various values of $s = U_{mc}/\sigma$, where U_{mc} is the amplitude of the signal pulse and σ is the RMS value of noise; n represents the number

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Accuracy of the Automatic Determination of the Coordinates by an All-round Scanning System

of signal pulses in a group. First the formulae for the above probabilities are employed to evaluate the tracking error in the case of simple position tracking. The error as a function of n is illustrated in Fig. 5. Next, the position and velocity tracking is considered and it is shown that the tracking error is in the form illustrated in Fig. 6. An expression for the tracking error for the case of position, velocity and acceleration tracking is also derived and this is illustrated in Fig. 7. The formulae for the tracking errors for the three cases are used to solve a numerical example and it is found that the position, velocity and acceleration tracking can give the lowest errors. From the graphs it is seen that for the signal-to-noise ratio of 3, the best results are obtained when the revolution velocity of the antenna is such that its directional pattern corresponds to 4 pulses (n = 4). There are 7 figures and 2 Soviet references, one of which is translated from English.

Card 3/4

VASIL'YEVA, Valentina Petrovna; GORSKIY, Aleksandr Ivanovich; KAZARINOV, Yuriy Mikhaylovich; KOLOMENSKIY, Yuriy Aleksandrovich; KRAYCHIK, Aron Borisovich; KUDRYAVTSEV, Dmitriy Vasil'yevich; MARMUZOV, Grigoriy Vasil'yevich; PESTOV, Yuriy Konstantinovich; TOLOKONNIKOV, Sergey Vasil'yevich; TOLSTYAKOV, Vladimir Sergeyevich; ZHEREBTSOV, I.P., red.; SOBOLEVA, Ye.M., tekhn. red.

[Design of radio pulse system components] Raschet elementov impul'snykh radiotekhnicheskikh ustroistv [By] V.P.Vasil'eva i dr. Pod red. IU.M.Kazarinova. Moskva, Gosenergoizdat, 1963. 429 p. (MIRA 16:7)
(Radio) (Pulse techniques (Electronics))

L 14983-63 EWT(d)/EWT(1)/FBD/FS(b)/T-2/BDS/EED-2/ES(t)-2 AFFTC/
ASD/AFMDC/ESD-3/APGC/SSD Pi-4/Pj-4/Pk-4/Pl-4/Pm-4/Pn-4 WR
ACCESSION NR: AP3004952 S/0108/63/018/008/0059/0066

91

AUTHOR: Kazarinov, Yu. M. 94

TITLE: Range of scanning radar with automatic target tracking 9

SOURCE: Radiotekhnika, v. 18, no. 8, 1963, 59-66

TOPIC TAGS: scanning radar, scanning-radar range, radar target tracking, radar automatic target tracking, automatic-target-tracking accuracy, automatic-target-tracking range, target-tracking range, target-tracking accuracy, first-order astaticism, second-order astaticism, astatic-survey system, signal-accumulation radar, pulse-packet detection, pulse packet, scan duration, noise overshoot

ABSTRACT: The dependence of the range of automatic target tracking on the parameters of the scanning radar and the order of astaticism of the automatic survey system is discussed for the cases of both presence and absence of signal accumulation. The following conclusions are reached. With first-order astaticism without accumulation, the minimum signal-to-noise ratio required for packet detection increases rapidly with an increase in k (Boltzmann constant) from 1 to 3. With a further increase in k this rise is slowed, especially at high values of the parameter $(a_1/\tau)N$ (N is number of pulses per packet, a_1 is the target shift during

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scan period at a scan velocity corresponding to N = 1 for the width of the antenna radiation pattern, and τ is the duration of noise overshoots). It is concluded that k = 3 represents the rational criterion for packet detection. With first-order astaticism, the use of accumulation makes it possible to lower the signal-to-noise ratio. In this case the probability of packet detection is not determined by $(a_1/\tau)N$ as such, but depends on both a_1/τ and N, which is assumed to be equal to the number of packet pulses. In order to increase the range in both cases of first-order astaticism it is advisable to ensure optimal directional characteristics of the antenna and provide for radar pulse duration and a pulse repetition rate as high as permissible in relation to the range resolution and average power of the transmitter. With astaticism of the second order without accumulation, it is expedient to select the lowest possible value of $(a_2/\tau)N^2$ as the parameter linking radar parameters to target maneuvers. As in astatic systems of the first order, a decrease of $(a_2/\tau)N^2$ is advantageous as regards both the range and the accuracy of automatic tracking. With accumulation, the signal-to-noise ratio required for packet detection decreases with the increase of N at high $(a_2/\tau)N^2$ values. However, with low $(a_2/\tau)N^2$ values the required signal-to-noise ratio is low and its dependence on N undergoes a radical change, so that an increase of N due to accumulation does not compensate the probability of the appearance of

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ACCESSION NR: AP3004952

overshoots with an amplitude exceeding that of the signal with noise overshoot. In order to increase the automatic tracking range of both astatic systems of the second order, it is necessary to ensure a minimal value of parameter $(a_2/\tau)H^2$; when selecting radar characteristics. However, while in the absence of accumulation it is immaterial on which parameter the decrease of the product is based, in the presence of accumulation the longest range will be achieved at the lowest possible value of a_2/τ. Orig. art. has: 9 figures and 12 formulas.

ASSOCIATION: none

SUBMITTED: 14Sep62 DATE ACQ: 06Sep63 ENCL: 00

SUB CODE: RA NO REF SOV: 002 OTHER: 001

Card 3/3

KAZARINOV, Yu.M.

Coverage of a radar station during the automatic tracking of the target. Radiotekhnika 18 no.8:59-66 Ag '63. (MIRA 16:10)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi imeni Popova.

BUKLER, Veniamin Osherovich; KAZARINOV, Yuriy Mikhaylovich; RABINOVICH, Yuriy Izrailevich; ANGELEVICH, Naum El'khonovich; VLADIMIROV, L.P., red. ; GIRSHMAN, G.Kh., red.

[Adjustment of radio equipment] Regulirovka radioapparatury. Izd.2., perer. [By] V.O.Bukler i dr. Moskva, Energiia, 1964. 430 p. (MIRA 17:10)

L 44699-66 EWT(m)/I

ACC NR: AP6031340 SOURCE CODE: UR/0386/66/004/003/0110/0114

AUTHOR: Kazarinov, Yu. M.; Legar, F. -- Lehar, F.; Yanout, Z. -- Janout, Z.

ORG: Joint Institute of Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

TITLE: Phase shift analysis of nucleon nucleon scattering at 400 Mev

SOURCE: Zh. eksper. i teoret. fiz. Pis'ma v redaktsiyu. Prilozheniye v. 4, no. 3, 1966, 110-114

TOPIC TAGS: phase shift analysis, nucleon interaction, scattering amplitude, nuclear scattering

ABSTRACT: Using more refined data on the triple-scattering polarization and parameters (R. Roth et al., Phys. Rev. v. 140B, 1533, 1965), the authors have improved on their earlier phase shift analysis at 400 Mev (Yadernaya fizika v. 2, 1095, 1965), which yielded three sets of phase shifts of equal probability as gauged by the χ^2 criterion. The used more accurate data on the triple-scattering polarization and parameters caused the first two earlier solutions to merge, and the errors of the phase shifts have been slightly reduced. Both sets of phase shifts are characterized by the fact that an imaginary part is possessed only by the phase shift of the $^1D_2$ wave. The imaginary parts of the ^3P and ^3F phases are small and do not improve the description of the experimental material. The new data are tabulated. From the obtained sets of phase shifts the authors calculated the dependences of the experimental

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ACC NR: AP7012412 SOURCE CODE: UR/0367/67/005/001/0140/0145

AUTHOR: Kazarinov, Yu. M.; Legar, F. -- Lehar, F.; Pisarev, A. F.; Yanout, Z. -- Janout, Z.

ORG: Joint Institute for Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

TITLE: Measurement of the triple scattering parameter R_{pn} at 70° CMS and the phase shift analysis at 630 MeV

SOURCE: Yadernaya fizika, v. 5, no. 1, 1967, 140-145

TOPIC TAGS: phase shift analysis, elastic scattering

SUB CODE: 20

ABSTRACT: The parameter R_{pn} and the polarization in elastic 605 MeV pn-scattering were measured at 70° with the result $R_{pn} = 0.09 \pm 0.19$ and $P_{pn} = -0.05 \pm 0.18$. These data were used to perform a phase shift analysis at 630 MeV, to calculate the experimentally measured quantities, and to plan further experiments, determining the parameters D_{pn}, R_{pn}, $C_{nn}{}^{pn}$ and $A_{ss}{}^{pn}$. The planning showed that within the given experimental possibilities a measurement of the parameters D_{pn} and A_{pn} will be the most efficient way to discriminate between the two remaining sets of phase shifts.

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ACC NR: AP7012412

The authors thank S. I. Bilen'ka, P. Vinternitets, L. I. Lapidus, and Yu. N. Simonov for useful discussions, and Ye. Dudova, V. A. Maksimova, V. M. Sakovskiy, S. I. [illegible], D. Timofeyeva, and Ya. Fingerova for help in the work. Orig. art. has: 1 figure, 2 formulas and 5 tables. [Based on authors' Eng. abst.] [JPRS: 40,393]

2/2

Kazarinov, Yu. M.

USSR/ Physics - Nuclear physics

Card 1/1 Pub. 22 - 15/63

Authors : Dzhelepov, V.P., and Kazarinov, Yu. M.

Title : Elastic dispersion of 380 mev neutrons by protons

Periodical : Dok. AN SSSR 99/6, 939-942, Dec 21, 1954

Abstract : Experiments with the dispersion of 380 mev neutrons by 480 mev protons, obtained at the synchrocyclotron of the Institute of Nuclear Forces of the Acad. of Scs. of the USSR, are described. Cross-sections of the (n-p) and (p-p) reactions also "total" (nuclear) cross-sections were determined theoretically and experimentally. Seven USSR references (1951-1954). Graphs; diagram.

Institution: The Institute of Nuclear Problems of the Acad. of Scs. of the USSR

Presented by: Academician L.A. Artsymovich, November 4, 1954

DZHELEPOV, V.P.; KAZARINOV, Yu.M.; GOLOVIN, B.M.; FLYAGIN, B.V.

Experimental investigation of neutron-nucleon and neutron-deuteron interactions in the 380--590 Mev energy range. Izv.AN SSSR Ser.fiz. 19 no.5:573-588 S-O '55. (MLRA 9:4)

1.Institut yadernykh problem Akademii nauk SSSR.
(Cosmic rays) (Nuclear physics)

KAZARINOV, Yu. M.

USSR/Physics - Neutrons

Card 1/2 : Pub. 22 - 12/60

Authors : Dzhelepov, V. P.; Kazarinov, Yu. M.; and Plyagin, V. B.

Title : Exchangeable dispersion of neutrons of 380 Mev energy over deutrons and the spinning relationship of exchanging forces

Periodical : Dok. AN SSSR 100/4, 655-658, Feb 1, 1955

Abstract : Experiments with (n-p) and (n-d) - dispersing systems are described. The experiments were intended to establish the relationship between the number of protons recoiling under a certain angle, mainly under angle $\theta = 0°$, and the number of neutrons in a beam of a diffuser (plane or heavy water with an equal number of hydrogen or deutercum particles). Otherwise the ratio $N_i^p(\theta)/N_i^n(\theta)$, was sought where $N_i^p(\theta)$ is

Institution : Acad. of Sci., USSR, Institute of Nuclear Problems

Presented by : Academician L. A. Artsymovich, December 9, 1954

Periodical : Dok. AN SSSR 100/4, 655-658, Feb 1, 1955

Card 2/2 : Pub. 22 - 12/60

Abstract : proportional to the difference of exchangeable cross-sections of the (n-p) and (n-d)-collisions, and for the given angle is determined as follows: $N_i^p(\theta)=K[\sigma_{np}(\theta)-\sigma_{nd}^{obm}(\theta)]$.
Seven references: 5 USSR and 2 USA (1951-1954). Graphs.

KAZARINOV, Yu. M.

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EXPERIMENTAL INVESTIGATION OF NEUTRON-NUCLEON AND NEUTRON-DEUTERON INTERACTION IN THE ENERGY REGION 380-590 MEV. V. P. Dzhelepov, Yu. M. Kazarinov, B. M. Golovin, V. B. Flyagin, and V. I. Satarov (Institute of Nuclear Problems of the Academy of Sciences of the U.S.S.R., Moscow). Nuovo cimento (10) 3, Suppl. No. 1, 61-79(1956). (In English)

Data on the nuclear interaction of particles in antisymmetric states were obtained from experimental scattering data of identical nucleons. Elastic scattering data of (n,p) and (n,d) reactions were investigated. (F.S.)

KAZARINOV, Yu.M.

CARD 1 / 2 PA - 1531

SUBJECT USSR / PHYSICS
AUTHOR KAZARINOV,JU.M., SIMONOV,JU.N.
TITLE The Elastic Scattering of Neutrons by Protons at an Energy of 580 MeV.
PERIODICAL Žurn.eksp.i teor.fis,31, fasc.2, 169-173 (1956)
Issued: 5.10.1956

Here the differential cross sections of such a scattering within the angular range of from 35 to 180° (in the center of mass system) are measured.
Test order: The differential cross sections in the interval of the scattering angles ϑ = 35,5 to 180° (in the center of mass system) were measured by registering the recoil protons produced by elastic (n-p) collisions. On this occasion the difference between the number of paraffin ($CH_{2,09}$) and graphite (C) scatterers (fitted to the neutron bundles) in the angles ϑ = 0 - 70° was determined. The energy distribution of the neutrons in the bundle has a maximum at 600 MeV and a half width of ~ 130 MeV. As scatterers paraffin and graphite disks were used with different slowing down power for the recoil protons. The detector consisted of three scintillation counters connected in coincidence and working on the basis of tolane crystals and photomultipliers. The absolute values of the differential cross sections of (n-p) scattering were determined by the normalization of the obtained energy distribution of the recoil protons with respect to the total cross section of the elastic scattering of neutrons by protons.

Measuring results: At 580 MeV and low energies exchange forces play an important part in connection with (n-p) interaction. On this occasion the contributions made by exchange- and ordinary interaction to the total cross section of elastic scattering are of the same order. The anisotropy of scattering increases with increasing energy. Conclusions: The data obtained are not in contradiction to the charge independence hypothesis. At 580 MeV $4\sigma_{np}(90^\circ) \gg (90^\circ)$ is true for the differential scattering cross sections. The states of the (n-p) system with the isotopic spins T = 0 and T = 1 make the contributions $\sigma_{T=0}(90^\circ) = 1.10^{-27}\,cm^2$/steread and $\sigma_{T=1}(90^\circ) = 3.10^{-27}\,cm^2$/steread to the cross section of scattering under $\vartheta = 90^\circ$. This may be due to the existence of a very strong interaction in these two states. The marked asymmetry of the $\sigma_{np}(\vartheta)$ with respect to the angle of 90° indicates that the interference of the waves corresponding to the states T = 0 and T = 1 influences the character of scattering considerably. This asymmetry is apparently the result of the interaction between two nucleons in the states of the system with high orbital momenta $l > 2$. The lack of a relativistic scattering theory prevents a rigorous interpretation of these data. The angular distribution $\sigma_{np}(\vartheta)$, which was found in nonrelativistic approximation, is explicitly given.

INSTITUTION: Institute for Nuclear Problems of the Academy of Science in the USSR.

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56-1-9/56

AUTHORS: Amaglobeli, N. S., Kazarinov, Yu. M.

TITLE: The Elastic Scattering of 580 MeV Neutrons by Protons in the Low Angle Region (Uprugoye rasseyaniye neytronov s energiyey 580 MeV protonami v oblasti malykh uglov).

PERIODICAL: Zhurnal Eksperimental'noy i Teoreticheskoy Fiziki, 1958, Vol. 34, Nr 1, pp. 3-6 (USSR)

ABSTRACT: The authors determined the differential cross sections of the elastic scattering of 580 MeV neutrons for the angles of 11°, 23°, and 35° in the center-of-mass system. The present paper continues the work of Yu. M. Kazarinov and Yu. N. Simonov (reference 1). At the beginning the experimental arrangement is discussed. The cross sections of the (n-p) scattering were determined by the determination of the number of those neutrons which fly away from the hydrogen target under a given angle. The neutrons with high energy were obtained by exchange scattering of 680 MeV protons at a beryllium target. This target was in the chamber of the synchro -cyclotron of the laboratory for nuclear problems of the United Institute for Nuclear Research (Laboratoriy yadernykh problem Ob"yedinennogo Instituta yadernykh issledovaniy). In some of the experiments the scattering

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. The Elastic Scattering of 580 MeV Neutrons by Protons in the Low Angle Region 56-1-9/56

scattering with similar energies confirms the conclusions from the hypothesis of the isotope invariability. There are 2 figures, and 9 references, 4 of which are Slavic.

ASSOCIATION: United Institute for Nuclear Research (Ob"yedinennyy institut yadernykh issledovaniy)

SUBMITTED: August 5, 1957

AVAILABLE: Library of Congress

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AMAGLOBELI, N.S.; KAZARINOV, Yu.M.

Elastic scattering of 580 Me v neutrons by protons in the low angle region [with summary in English]. Zhur. eksp. i teor. fiz. 34 no.1: 53-57 Ja '58. (MIRA 11:5)

1.Ob"yedinennyy institut yadernykh.
(Neutrons--Scattering) (Collisions (Nuclear physics))

AUTHORS: Kazarinov, Yu. M., Simonov, Yu. N. SOV/56-35-1-10/59

TITLE: Measurement of the Total Production Cross Section of Charged π-Mesons in n-p Collisions at Neutron Energies of 586 MeV (Izmereniye polnogo secheniya obrazovaniya zaryazhennykh π-mezonov v n-p-stolknoveniyakh pri energii neytronov 586 MeV)

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1958, Vol 35, Nr 1, pp. 78 - 84 (USSR)

ABSTRACT: The production of charged pions in n-p collisions has been comparatively only little investigated (Ref 1; E_n=409 MeV; Ref 2 - $E_n \sim 600$ MeV, E_p = 760 MeV, method of nuclear emulsions, π^+-π^--spectra at ϕ=90° (laboratory system), targets of pure hydrogen). The present paper deals with the determination of the total yield of charged pions within an angular range of 15 to 120° at effective E_n=586 MeV. The experiments were carried out on the synchrocyclotron of the Ob"yedinennyy institut yadernykh issledovaniy (United Institute of Nuclear Research). The energy distribution of the neutrons in the beam had a maximum

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at 600 MeV (half width 130 MeV). For the purpose of determining the differential cross section of the production of charged pions in n-p collisions the ratio between the sum of π^+ and π^--mesons N_π and the number of recoil protons N_p was investigated in dependence on ϕ. (ϕ = angle of incidence of the neutron beam inciding on to the target). The experimental arrangement is shown by figure 1. The neutron beam passes through the monitor (ionization chamber and impinges on the scatterer. Beside the latter (at a certain angle to the original direction of the beams) is the radiator of the Cherenkov counter between 2 scintillation counters, and behind a filter there is the 3rd counter. For the separation of the pions various types of detectors were used: A Cherenkov counter was used for ϕ = 15° and 30° with two scintillation counters connected in coincidence, for ϕ = 45° a Cherenkov counter (plexiglass) + 2 scintillation counters in coincidence, and for ϕ = 60,90,120° 3 scintillation counters in coincidence were used. Assuming the charge symmetry of the nuclear forces $\sigma(np \rightarrow \pi^+) = \sigma(np \rightarrow \pi^-)$, $(2,0 \pm 0,5).10^{-27} cm^2$., was obtained ($\phi$ is always given in

Measurement of the Total Production Cross Section of Charged π-Mesons in n-p Collisions at Neutron Energies of 586 MeV

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the laboratory system). In conclusion the authors thank I. I. Lapidus for discussing the results and N.S.Amaglobeli for his assistance in carrying out the work.There are 3 figures, 2 tables, and 12 references, 8 of which are Soviet.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy, Laboratoriya yadernykh problem(United Institute of Nuclear Research, Laboratory for Nuclear Problems)

SUBMITTED: February 27, 1958

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24.6510, 16.8100

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SOV/56-37-6-13/55

AUTHORS: Amaglobeli, N. S. and Kazarinov, Yu. M.

TITLE: Elastic Scattering of the 630 mev Neutrons by Protons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1959, Vol 37, Nr 6, pp 1587-1593 (USSR)

ABSTRACT: Differential elastic (n—p) -scattering cross sections $\sigma_{np}(\vartheta)$ were measured in the angle range $\vartheta = 11^{\circ} - 180^{\circ}$ (center mass system) for neutrons with a mean energy of (630 ± 15) mev. The cross sections were measured by two different methods. In one case, the differential cross section was determined by registering recoil protons in the interval of angles where the scattered neutron transmits a considerable part of its initial kinetic energy to the proton. In another case, the differential cross section was determined by the

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direct measurement of the neutrons scattered at a given angle. The setup employed was described by B. M. Golovin, V. P. Dzhelepov, Yu. V. Katyshev, A. D. Konin, and S. V. Medved in their earlier publication (cf., Zhur. eksp. i teoret. fiz., 36, 735, 1959). In the evaluation of the filter thickness for angles $\theta = 15^{\circ}$, 10°, 5°, it was assumed that the average loss of energy during the "recharge" of the neutrons in light substance comprised 15% of the initial energy. The angular resolution of the neutron detector was 2°. The background at 15°, 10°, and 5° angles was 50% and 70%, respectively. The main source of the background were neutrons undergoing diffraction scattering at the tip of a steel collimator and thus forming a neutron beam. The absolute values of the differential cross sections were obtained by the normalization of the experimental data according to the total cross section of elastic scattering of

neutrons by protons, $\sigma_{np}^{elastic}$. This cross section was calculated on the basis of the theory developed by V. P. Dzhelepov, V. I. Satarov, and B. M. Golovin (cf., Doklady Akad. Nauk SSSR, 104, 717, 1959) and Yu. D. Prokoshkin and A. A. Tyapkin (cf., Zhur. eksp. i teoret. fiz., 32, 750, 1957). Within the experimental error the obtained data accorded with the results of measurements carried out by the authors previously (cf., Zhur. eksp, i teoret. fiz., 53, 1958), when the mean energy of neutrons was 580 mev. The value $f^2 = 0.06 \pm 0.02$ was obtained from the dependence of $\sigma_{np}(\vartheta)$ near the angle $\vartheta = 180^{\circ}$ by the method of G. F. Chew (cf., Phys. Rev., 112, 1380, 1958).

The following persons made contributions in the course of this study: V. P. Dzhelepov, Yu. N. Simonov, V. A. Meshcheryankov, V. N. Dmitrievskiy, Yu. A. Kuznetsov, A. V. Chekmenev, B. M. Pontecorvo, L. I. Lapidus, and A. A. Tyapkin. There is a

Kazarinov, Yu.

S/056/60/038/02/58/06:
B006/B014

24.6900

AUTHORS: Amaglobeli, N. S., Golovin, B. M., Kazarinov, Yu. M., Medved', S. V., Polev, N. M.

TITLE: Determination of the Coupling Constant of Pion - Nucleon Interaction From the Cross Section of Elastic Neutron Scattering by Protons at an Energy of 630 Mev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 38, No. 2, pp. 660-662

TEXT: In a previous article (Ref. 1) the authors used the differential elastic np-collision cross sections $\sigma_{np}(\vartheta)$ at $E_n = 630$ Mev in the angular range $160^0 \leq \vartheta \leq 180^0$(c.m.s.) for the purpose of determining the coupling constant f^2 by Chew's method: $x^2\sigma_{np}(\vartheta) = A + Bx + Cx^2 + \ldots + dx^m$ with $x^2 = (1+\mu^2/2k^2+\cos\vartheta)^2$, where μ is the pion mass and k the nucleon momentum. In this expansion, the coefficient A is directly expressed by f^2. In order to approach the experimental cross-section

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Determination of the Coupling Constant of Pion - Nucleon Interaction From the Cross Section of Elastic Neutron Scattering by Protons at an Energy of 630 Mev

values by the function $x^2\sigma_{np}(\vartheta)$, the authors used a series of experimental functions, ranging from linear to parabolic functions of the fourth order. The use of polynomials higher than of the fourth degree would have been inadequate because the number of the points $x^2\sigma_{np}(\vartheta)$ was small. The most probable values were found to be $f^2 = 0.04$ and $f^2 = 0.085$; however, their choice was not possible in view of the low statistical accuracy and the small number of points. The mean value was $f^2 = 0.06 \pm 0.02$. In order to increase accuracy and to obtain more experimental points, the authors made further measurements within the same angular range by two methods, i.e., the method of the ring scatterer (Ref. 3) and by means of an ordinary detector which recorded the recoil protons. The two methods are briefly described. The number of points on the $\sigma_{np}(\vartheta)$ curve was doubled (10 points) by these measurements. However, also in this case it would have been useless to use terms

Card 2/3

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24.6900

AUTHORS: Amaglobeli, N. S., Kazarinov, Yu. M., Sokolov, S. N., Silin, I. N.

TITLE: Determination of the Constant of the π-Meson - Nucleon Interaction on the Basis of the Differential Cross Section of Elastic np-Scattering

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960, Vol. 39, No. 4(10), pp. 948-953

TEXT: In the introduction, the authors discuss the determination of the pion - nucleon interaction constant f suggested by G. F. Chew (Ref. 1). They discuss the different values obtained for f, which can not be explained as being due to experimental errors. In order to clarify this problem, they evaluate all the available data on np scattering for 90, 380-400, and 630 Mev (Refs. 2,3) for determining the constant f taking account of both the poles of the real part of the np scattering amplitude. They start out from the equation (1):

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Determination of the Constant of the π-Meson - Nucleon Interaction on the Basis of the Differential Cross Section of Elastic np-Scattering

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B004/B070

$$\sigma_{np}(\vartheta) = a_1 b^2 \left[1/(x_0 - x)^2 + 4/(x_0 + x)^2\right] + a_2/(x_0 - x) + a_3/(x_0 + x) + \sum_{n=0}^{n_{max}} a_n x^n$$

, where $x_0 = 1 + \mu^2/2k^2$, $x = \cos\vartheta$, $b = \mu^2/2k^2$, a_1, a_2, ...a_n are coefficients which are calculated by the method of least squares. The results are given in Tables 1 - 4. The authors come to the conclusion that the experimental data in the energy range studied do not contradict a constant value for $f^2 = 0.08$. However, for a more rigorous demonstration of the validity of equation (1), a further accuracy is required. The regions of ϑ in which a greater accuracy is particularly required are shown in a diagram. The authors thank Professor Ya. A. Smorodinskiy, and Professor B. M. Pontekorvo for discussions, and I. N. Kukhtina for collaboration in the work. There are 1 figure, 4 tables, and 9 references: 2 Soviet, 5 US, 1 German, and 1 Italian.

Card 2/3

KAZARINOV, Yu.M.; KISELEV, V.S.; SILIN, I.N.; SOKOLOV, S.N.

Determination of the π-meson - nucleon interaction constant from the differential cross sections of elastic pp-scattering. Zhur.eksp.i teor.fiz. 41 no.1:197-198 Jl '61. (MIRA 14:7)

1. Ob"yedinennyy institut yadernykh issledovaniy.
(Protons—Scattering) (Mesons) (Nucleons)

KAZARINOV, Yu. M., LEHAR, F., and SILIN, I. N.

"Application of Conformal Mapping to the Extrapolation of Experimentally Observed Dependences to the Unphysical Region"

report presented at the Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Lab. of Nuclear Problems
Lab. of Theoretical Physics

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721320020-4"

KAZARINOV, Yu. M.; SILIN, I. N.

"Phase Shift Analysis of nn Scattering at 40, 95, 147, 210, and 310 MEV"

report presented at the intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Joint Institute for Nuclear Research, Laboratory of Nuclear Problems, Laboratory of Theoretical Physics

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721320020-4"

KAZARINOV, Yu. M.; KISELEV, V. S.

"Exchange nd Scattering at 200 and 630 MEV"

report presented at the Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Joint Institute for Nuclear Research, Laboratory of Nuclear Physics

KAZARINOV, Yu. M. and SIMONOV, Yu. N.

"N-P Scattering at 200 Mev"

report presented at Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Joint Inst. for Nuclear Research
Lab. of Nuclear Problems

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721320020-4"

KAZARINOV, Yu. M., SIMONOV, Yu. N.

"π^--Meson Production in np Collisions at 400-600 Mev"

report presented Intl. Conference on High Energy Physics, Geneva, 4-11 July 1962

Joint Institute for Nuclear Research
Laboratory of Nuclear Problems

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721320020-4"

KAZARINOV, Yu.M.; SIMONOV, Yu.N.; SARANTSEVA, V.R., tekhn. red.

[Neutron-proton scattering at a neutron energy of 200 Mev] N-P-rasseianie pri energii neitronov 200 Mev. Dubna, Ob"edinennyi in-t iadernykh issl., 1962. 11 p. (MIRA 15:4)
(Neutrons--Scattering) (Protons)

KAZARINOV, Yu.M.; SILIN, I.N.; SARANTSEVA, V.R., tekhn. red.

[Phase shift analysis of nucleon-nucleon scattering at energies of 40, 95, 147, 310 Mev] Fazovyi analiz nuklon-nuklonnogo rasseianiia pri energii 40, 95, 147, 310 Mev. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1962. 16 p. (MIRA 15:6)
(Nucleons—Scattering)

KAZARINOV, Yu.M.

Probability of detecting a batch of radar pulses having a non-rectangular envelope. Radiotekhnika 17 no.11:74-76 N '62.
(MIRA 15:11)

1. Deystvitel'nyy chlen Nauchno-tekhnicheskogo obshchestva radiotekhniki i elektrosvyazi.
(Radar) (Pulse techniques (Electronics))

S/056/62/043/001/006/056
B125/B102

AUTHORS: Kazarinov, Yu. M., Simonov, Yu. N.

TITLE: np scattering of 200-Mev neutrons

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 35-39

TEXT: A neutron beam was obtained from stripping reactions induced by 400-Mev deuterons extracted from the OIYaI synchrocyclotron. The energy distribution of the neutrons was symmetric about its maximum at E_n = 192 Mev. The differential cross section obtained by recording the recoil protons scattered through recoil angles $0 \leq \vartheta \leq 55^0$ (laboratory system) using a telescope of four scintillation counters decreases with a gradually decreasing slope from $\sim 9.5 \cdot 10^{-27}$ cm^2 sterad^{-1} at $\sim 10^0$ to its minimum value ($\sim 2 \cdot 10^{-27}$ cm^2 sterad^{-1}) at $\vartheta \sim 83^0$, whereupon it increases to $11 \cdot 10^{-27}$ cm^2 sterad^{-1} at $\sim 170^0$, first slowly and then rather steeply. This angular distribution is appreciably asymmetric with respect to $\vartheta = 90^0$. The total cross section σ_t for the scattering of neutrons from

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protons, determined from the difference between neutron absorption in polyethylene disks and that in graphite disks, was found to be $(42.7 \pm 0.9) \cdot 10^{-27}$ cm^2. The pion-nucleon interaction constant f^2 as calculated from measurements of the angular distribution of the scattered particles is 0.08 ± 0.02. At energies of 90 and 200 Mev, the real part of the scattering amplitude makes a great contribution to the cross section for scattering through an angle of 0^0. There are 3 figures.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: February 20, 1962

Card 2/2

Phase shift analysis of nucleon-...

S/056/62/043/002/045/053
B108/B102

SUBMITTED: March 31, 1962

Card 2/2

h1133
s/056/62/043/004/036/061
B108/B102

24.6600

AUTHORS: Kazarinov, Yu. M., Silin, I. N.

TITLE: Phase shift analysis of nucleon-nucleon scattering at energies of 40, 95, 147, and 310 Mev

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 4(10), 1962, 1385-1393

TEXT: Phase shift analysis of np and pp-scattering was carried out by a method described earlier (ZhETF, 43, 692, 1962). Evaluation of published data showed that the experimental data between 95 and 310 Mev are consistent with the idea that the scattering amplitude from orbital angular momenta $l \geq 3$ on is given in single-meson approximation with sufficient accuracy. The mean value of the pion-nucleon interaction constant was found to be 0.078 ± 0.003 which agrees well with the value from np-scattering experiments ($f^2 = 0.080 \pm 0.002$). The phase shifts of the individual waves are shown in Figs. 2 and 3. The phase shifts of the waves $t = 0$ and $t = 1$ have the same magnitude on the average. Thus, in the energy range studied, nucleons in states which differ in isotopic spin interact with equal strengths.

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S/056/62/043/004/036/061
B108/B102

Phase shift analysis of...

There are 3 figures and 7 tables.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: April 23, 1962

Fig. 2. Energy dependence of the phase shifts of the waves $^1F_3$, $^3F_2$, $^3F_3$, $^3F_4$.

Fig. 3. Energy dependence of the phase shifts of the waves $^1S_0$, $^3S_1$, $^1P_1$ $^3P_0$, $^3P_1$, $^3P_2$, $^1D_2$, $^3D_1$, $^3D_2$, $^3D_3$.

Card 2/12

S/056/63/044/001/052/067
B187/B102

AUTHORS: Kazarinov, Yu. M., Legar, F., Silin, I. N.

TITLE: Application of conformal mapping to extrapolating functions observed on scattering of high-energy particles in the nonphysical region

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 44, no. 1, 1963, 311-315

TEXT: Determination of the coupling constants f^2 of the pion-nucleon interaction requires the analytical continuation of functions found experimentally in the nonphysical region. The same is true of determining the spectral functions of the scattering amplitude. According to W.R. Frazer (Phys. Rev., 123, 2180, 1961) the solution of this problem can be simplified considerably by the conformal mapping

$$w=\left[1-\sqrt{\frac{b}{a}\left(\frac{a-x}{b+x}\right)}\right]\Big/\left[1+\sqrt{\frac{b}{a}\left(\frac{a-x}{b+x}\right)}\right]. \qquad (1)$$

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in the unit circle. $x = \cos\vartheta$ and a,b lie on the real axis and are boundaries of the region to be mapped in the unit circle. f^2 is calculated from the differential elastic cross sections σ_{np} at 90, 200, 380 - 400 and 630 Mev, and σ_{pp} at 147 and 380 Mev, the branch point at $x = \pm a_0 = \pm (1 + 4\mu^2/mT)$ being taken into account or neglected. m is the mass of the nucleon and μ that of the pion; T is the kinetic energy of the nucleon in the lab system. $f^2 \approx 0.05 - 0.08$ is obtained with an error of $\pm$ 10-15%. Furthermore, the pole order of the nucleon-nucleon scattering amplitude in the $x = \cos\vartheta$ plane is determined at $x = \pm (1 + \mu^2/mT)$. According to I.Chulli, S. Chulli, and Ya. Fisher (Preprint OIYaI,D-832, 1951; Nuovo Cim., 23, 1129, 1962), the conformal mapping (1) considerably simplifies the extrapolation of the scattering amplitude $M(\omega)$ in the region of spectral functions. The power series to be approximated for the expression $M(\omega)\sqrt{a_0^2 - x^2}$, which is to be extrapolated, goes over into a Fourier series. The sum of the even terms of the latter determines the jump in the cross section. The effective spectral function is determined for the elements

Card 2/3

Application of conformal mapping to ... S/056/63/044/001/052/067
B187/B102

M_{ss}, M_{11}, M_{oo}, M_{o1}, and M_{1o} of the transition matrix of np-scattering and pp-scattering at 147, 210, and 310 Mev. The spectral function exhibits definite oscillatory behavior. The inaccuracy of the experimental data allows no detailed determination.

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: August 1, 1962

Card 3/3

L 19623-63 EWT(m)/BDS AFFTC/ASD

ACCESSION NR: AP3007085 S/0056/63/045/003/0637/0642

AUTHORS: Kazarinov, Yu. M.; Kiselev, V. S.; Silin, I. N.

TITLE: Phase shift analysis of nucleon-nucleon scattering at 147 MeV

SOURCE: Zh. eksper. i teoret. fiziki, v. 45, no. 3, 1963, 637-642

TOPIC TAGS: nucleon-nucleon scattering, phase shift analysis

ABSTRACT: The phase shifts previously obtained by the authors (ZhETF v. 43, 1385, 1962 and Preprint R-1011, OIYaN, 1962) are made more precise on the basis of new experimental data obtained from various sources. It is shown that in the vicinity of ±5° this solution is unique. The phase shifts are found to differ by as much as three orders of magnitude from the values obtained by Breit et al (Phys. Rev. v. 128, 826, 1962) and from the phase shifts calculated using the Hamada-Johnson potentials (Nucl. Phys. 34, 382, 1962).

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L 19623-63

ACCESSION NR: AP3007085

"In conclusion, I thank S. M. Bilen'kiy, L. I. Lapidus, A. A. Logunov, R. M. Ryndin, and L. L. Nemenov for a discussion of the results touched upon in the work." Orig. art. has 5 figures and 2 tables.

ASSOCIATION: Ob''yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 27Feb63	DATE ACQ: 08Oct63	ENCL: 00
SUB CODE: PH	NO REF SOV: 003	OTHER: 018

Card 2/2

KAZARINOV, Yu.M.; LEGAR, F.; PETER, G.; PISAREV, A.P.; FAL'LENUKH, K.M.

[Measuring the coefficients of spin correlation C_{nn} and Ckp in elastic pp-scattering at an energy of 315 Mev. at an angle of 45° in the center-of-mass system] Izmerenie koeffitsientov spinovoi korreliatsii C_{nn} i C_{kp} v uprugom pr-rasseianii pri energii 315 MEV pod uglom 45° v s.ts.m. Dubna, Ob"edinennyi in-t iadernykh issledovanii, 1964. 11 p. (MIRA 17:6)

ACCESSION NR: AP4019249 S/0056/64/046/002/0797/0803

AUTHORS: Kazarinov, Yu. M.; Kiselev, V. S.

TITLE: Phase shift analysis of nucleon-nucleon scattering at an energy 630 MeV

SOURCE: Zhurnal eksper. i teor. fiz., v. 46, no. 2, 1964, 797-803

TOPIC TAGS: nucleon-nucleon scattering, nucleon proton scattering, proton proton scattering, phase shift analysis, simultaneous phase shift analysis, most probable solution

ABSTRACT: An attempt is made to reconstitute the nucleon-nucleon scattering amplitude for nucleons in state with total isospin t = 0 from the results obtained by the Dubna group (ZhETF v. 44, 1106, 1963; preprint, OIYaI R-1217, Dubna, 1963; ZhETF v. 45, 664 and 1169, 1963, D-1236, Dubna, 1963, R-1266, Dubna, 1963; ZhETF, 45, 1174, 1963) and from known data on np scattering at 630 MeV. This is done

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ACCESSION NR: AP4019249

by a simultaneous phase shift analysis of the np and pp scattering, to permit the use of the scanty experimental information for the planning of future experiments. Three sets of phase shifts with approximately equal χ^2 probability were obtained, and additional experiments must be made in order to choose the best among the obtained solutions. "The authors are grateful to I. N. Silin and L. I. Lapidus for numerous useful discussions." Orig. art. has: 4 figures and 4 tables.

ASSOCIATION: Ob"yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 01Aug63 DATE ACQ: 27Mar64 ENCL: 00

SUB CODE: PH NO REF SOV: 018 OTHER: 001

Card 2/2

ACCESSION NR: AP4025925 S/0056/64/046/003/0920/0925

AUTHORS: Kazarinov, Yu. M.; Kiselev, V. S.; Satarov, V. I.

TITLE: Energy dependence of phase shifts in the scattering of nucleons by nucleons in the energy range 23-126 MeV

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46, no. 3, 1964, 920-925

TOPIC TAGS: nucleon nucleon scattering, phase shift analysis, phase shift energy dependence, pp scattering, np scattering, unique solution

ABSTRACT: The phase shift analysis was carried out in an energy region where the experimental data are patently insufficient for a unique solution. The phase shift analysis program was analogous to that used earlier (Yu. M. Kazarinov and I. N. Silin, ZhETF, v. 43, 692 and 1385, 1962). The normal program of the phase shift analysis

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ACCESSION NR: AP4025925

with a search of solutions starting with random initial values was made at 52 and 126 MeV. The energy dependence of the most likely among the obtained seven phase shifts is traced at 23.1 and 66 MeV by refining interpolated values of the phase shifts with the aid of the existing experimental data. The resultant energy dependence is in satisfactory agreement with earlier results obtained by the authors and by others. "The authors are grateful to I. N. Silin and L. I. Lapidus for numerous discussions, to A. Carroll for communicating the data on np-scattering at 126 MeV and for useful remarks, and to B. Rose for reporting J. K. Perring's results of a pp-scattering phase shift analysis. Orig. art. has: 1 figure and 4 tables.

ASSOCIATION: Ob"yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 01Aug63 DATE ACQ: 16Apr64 ENCL: 01

SUB CODE: PH NO REF SOV: 005 OTHER: 020

Card 2/3

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000721320020-4"

AUTHORS: Kazarinov, Yu. M.; Legar, F.; Peter, J.

TITLE: Measurement of spin correlation coefficients in p-p scattering at 315 MeV energy

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, no. 3, 1964, 848-854

TOPIC TAGS: spark discharge chamber, spin correlation coefficient, elastic scattering, proton proton scattering, phase shift analysis

ACCESSION NR: AP4046397

ACCESSION NR: AP4046397

Card 1/2

L 45655-65
ACCESSION NR: AP5009830

obtained for the total cross section of the np and nC reactions are [illegible] -27 2 respectively [illegible]

ASSOCIATION: Ob"yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: [illegible] ENCL: Y [illegible]

NR REF SOV: 004 OTHER: 000

Card 2/2

ANDREYENKO, S.S., KAZARINOVA, L.A.

Changes in certain physiological processes in corn seedlings induced by different pH values in the root zone. Nauch.dokl.vys.shkoly; biol.nauki no.1:149-154 '58 (MIRA 11:8)

1. Predstavlena kafedroy fiziologii rasteniy Moskovskogo gosudarstvennogo universiteta im. M.V. Lomonosova.
(CORN (MAIZE))
(HYDROGEN-ION CONCENTRATION)